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Applicant Initiated Interview Request Form

Application No.: 10/511,335 First Named Applicant: REITINGER, Erich

Examiner: GRAVINI, Stephen M. Art Unit: 3743 Status of Application: Pending

Tentative Participants:

(1) Examiner S. Gravini (2) Attorney R. Paciulan

(3) _____ (4) _____

Proposed Date of Interview: Thursday 4/15/10 **Proposed Time:** 10AM **AM/PM**

Type of Interview Requested:

(1) ☑ **Telephonic** (2) ☐ **Personal** (3) ☐ **Video Conference**

Exhibit To Be Shown or Demonstrated: ☑ **YES** ☐ **NO**

If yes, provide brief description: proposed claim amendments and remarks distinguishing cited reference

Issues To Be Discussed

Issues (Rej., Obj., etc)	Claims/ Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) 102(b)	1, 6	Tarui et al.	☐	☐	☐
(2)			☐	☐	☐
(3)			☐	☐	☐
(4)			☐	☐	☐

☐ Continuation Sheet Attached

Brief Description of Argument to be Presented:

Proposed Amendments to independent Claims 1 and 6 better set forth the claimed invention.

Claims 1 and 6 are not anticipated by Tarui et al.

An interview was conducted on the above-identified application on _____ .

NOTE: This form should be completed by applicant and submitted to the examiner in advance of the interview (see MPEP § 713.01).

This application will not be delayed from issue because of applicant's failure to submit a written record of this interview. Therefore, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible.

Richard J. Paciulan
Applicant/Applicant's Representative Signature

Richard J. Paciulan
Typed/Printed Name of Applicant or Representative

28,248
Registration Number, if applicable

/Stephen Gravini/
Examiner/SPE Signature

PROPOSED AMENDMENTS TO CLAIMS 1 AND 6 TO NOW READ:

1. A method for conditioning semiconductor wafers and/or hybrids, comprising:

preparing a space which is essentially enclosed by a container and has a wafer/hybrid chuck which is located therein and has the purpose of holding a semiconductor wafer and/or hybrid applied to the wafer/hybrid chuck;

pre-cooling a dry fluid in a heat-exchanger outside the space;

conducting the pre-cooled fluid via a first line out of the heat exchanger into the wafer/hybrid chuck, and then through the wafer/hybrid chuck in order to cool the wafer/hybrid chuck;

conducting at least a portion of the fluid having been conducted through the wafer/hybrid chuck, via a second line out of the wafer/hybrid chuck to the heat exchanger; and

heating the portion, by using a residual coldness of the portion to cool the heat exchanger in order to contribute to the pre-cooling of the fluid in the heat exchanger;

wherein the heated portion is conducted via a third line from the heat exchanger into the space, before being allowed to flow out within the space in order to condition the atmosphere in the space.

6. A method for conditioning semiconductor wafers and/or hybrids, comprising:

preparing a space which is essentially enclosed by a container and has a wafer/hybrid chuck which is located therein and has the purpose of holding a semiconductor wafer and/or hybrid applied to the wafer/hybrid chuck;

pre-cooling a dry fluid in a heat-exchanger outside the space;

conducting the pre-cooled fluid via a first line out of the heat exchanger into the wafer/hybrid chuck, and then through the wafer/hybrid chuck in order to cool the wafer/hybrid chuck;

wherein at least a portion of the fluid having been conducted through the wafer/hybrid chuck is used to condition the atmosphere within the space;

wherein a first portion of the fluid having been conducted through the wafer/hybrid chuck is firstly conducted via a second line out of the wafer/hybrid chuck to the heat exchanger, then heated by using a residual coldness of the first portion to cool the heat exchanger in order to contribute to the pre-cooling of the fluid in the heat exchanger, and then conducted via a third line from the heat exchanger into the space, before being allowed to flow within the space; and

wherein a second portion of the fluid having been conducted through the wafer/hybrid chuck is allowed to flow out within the space directly after it leaves the wafer/hybrid chuck.

PROPOSED ADDITIONAL CLAIMS 22 AND 23:

22. The method according to Claim 1, wherein the pre-cooled fluid, when conducted through the wafer/hybrid chuck in order to cool the wafer/hybrid chuck, crosses the wafer/hybrid chuck in a cooling coil or cooling pipe.

23. The method according to Claim 6, wherein the pre-cooled fluid, when conducted through the wafer/hybrid chuck in order to cool the wafer/hybrid chuck, crosses the wafer/hybrid chuck in a cooling coil or cooling pipe.

REMARKS REGARDING CLAIM AMENDMENTS AND NEW CLAIMS

the term "holding device" has been replaced by "chuck", based on page 2, line 6 of the specification;

the words "applied to the wafer/hybrid chuck" have been added, based on page 1, line 12 in connection with page 2, line 6 of the specification;

the expression 'portion of the fluid having left" has been replaced by "portion of the fluid having been conducted through", based on page 9, line 3 of the Specification;

the second line has been specified to lead out of the wafer/hybrid chuck, based on the wording of original claim 13; and

the third line has been specified to extend from the heat exchanger into the space, based on the wording of original claim 10 and figure 3.

The description on page 10, lines 14 to 16 discloses that a residual coldness of the portion of the fluid having been conducted through the wafer/hybrid chuck is used to cool the heat exchanger, in this way according to page 9, lines 33-36 contributing to the pre-cooling of the fluid in the heat exchanger.

Two new claims 22 and 23 have been added based on page 3, lines 20-22 of the description. This part of the description, according to the remark on page 7, lines 20-22, is relevant to all of the figures.

REMARKS DISTINGUISHING PRESENT INVENTION WITH CITED TARUI ET AL. REFERENCE

According to the amended independent claims, the dry fluid after having been pre-cooled in the heat exchanger is conducted succesively first through the first line, then through the wafer/hybrid chuck, then through the second line back to the heat exchanger. Because the first line leads out of the heat exchanger into the wafer/hybrid chuck and the second line leads out of the wafer/hybrid chuck to the heat exchanger, which is located outside the space, the fluid portion remains separate from the space during these steps, which the claims confirm to happen before (= without, at this stage) allowing the fluid portion to flow out within the space. In this way, the fluid portion is enabled to cool the wafer/hybrid chuck including the wafer, which by being applied to the chuck is in thermal contact with it, substantially without undesirably lowering the temperature of the atmosphere in the space. Thereby the fluid portion retains a residual coldness, which then is used to cool the heat exchanger to contribute to the heat exchanger's task of pre-cooling freshly supplied fluid. It is only after having contributed in this way and thereby given up its residual coldness that the portion is allowed to flow out within the space. In this way, the dry, pre-cooled fluid used for cooling the wafer is re-used in a two-fold-way.

(1) its coldness is utilized in the heat exchanger for the pre-cooling of freshly supplied fluid.

(2) its dryness is utilized for conditioning the atmosphere within the space at a desired temperature that is higher than the temperature of the wafer.

As such, the two separate tasks of providing a cool wafer and a warmer, dry atmosphere surrounding it, can be performed with only a small amount of energy. The Applicant submits that Tarui et al. fails to disclose or render obvious such an arrangement.

Tarui et al. discloses a method for drying semiconductor wafers in which a plurality of wafers are arranged vertically on a horizontal boat 19 in a vessel 11. By heating liquid IPA at the bottom of the vessel using a first heat exchanger tube 17, dry IPA vapor is generated such that it flows out within the vessel and among the wafers. Second heat then is passed through a drain pipe 22 over the inner wall of the vessel to its bottom (column 4, line *25-3* 1) where again it is heated by the first heat exchanger tube 17. The wafer boat 19 and wafers, being positioned away from the inner walls of the vessel, thus are never reached by the IPA cooled by the second heat exchanger tube 21 but are maintained at the temperature of the IPA vapor generated by the first heat exchanger tube 17.

The Applicant submits that there is no hint or suggestion in Tarui et al. for the measures by which the present invention achieves to condition a wafer at a lower temperature than a surrounding atmosphere, i.e., for providing a chuck to which the wafer can be applied and for transporting pre-cooled fluid between the heat exchanger and the chuck through lines such that the fluid flows out within the space only after it has been heated in the heat exchanger. Moreover, since Tarui et al. is concerned solely with drying wafers, it does not provide any motivation for conditioning a wafer at a temperature lower than the surrounding atmosphere, even teaching (column 4, line 66 to column *5,* line 4) to increase the temperature of the wafers beyond that of their surroundings by irradiating them with infrared rays.

Accordingly, the Applicant believes that the subject-matter of the amended independent Claims 1 and 6 is not anticipated by Tarui et al.